



UNITED STATES PATENT AND TRADEMARK OFFICE

ma
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,053	12/19/2001	Michael Binnard	PAO-246	9790

7590 03/30/2004
McGuireWoods
Suite 1800
1750 Tysons Boulevard
Tyson's Corner
McLean, VA 22102-4215

EXAMINER

MOHANDESI, IRAJ A

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 03/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/021,053	Applicant(s) BINNARD ET AL.	
	Examiner Iraj A Mohandesi	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/13/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 27-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1--23,29 and 31 is/are rejected.
- 7) ☒ Claim(s) 27,28 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-6,8-11,13,18,19,29,31** are rejected under 35 U.S.C. 102(b) as being anticipated by **Bader US patent 5,763,965**.

Regarding claims 1,18,19,**Bader'965** discloses a stage assembly comprising a first motor that includes a first part and a second part (7a , 7b magnets ,column 3,line 57 and 9 coil ,column 4,line 1 ,Fig.1a,2), the first motor producing inherently a first force (column 5,line 25,according to Lorenz and Maxwell laws) ; a second motor that includes a first part and a second part (13 coil, column 4,line 64 and 11 magnet, column 4,line 60,Fig.1a,2) the second motor producing a second force inherently a first force (according to Lorenz and Maxwell laws, column 5,line 25) a base (1,the base plate column 3,line 46 ,Fig.1a,2) to which the first part of the first motor is attached, a stage (2,middle plate ,column 3,line 46,Fig. 1a,2) to which is attached the second part of the first motor and the second part of the second motor, the stage moving relative to the base (column 3,line 55) by at least one of the first force and the second force (see column 5,line 25) and a second stage (3, column 3,line 49) to which the first part of the second motor is attached wherein the base and the second stage are different respective bodies (see Fig.1a,2,)

Art Unit: 2834

Regarding claim 2-6 **Bader'965** discloses a stage assembly comprising the first part of the first motor and the second part of the first motor interacts inherently with each other to produce the first force and the first part of the second motor and the second part of the second motor interact with each other to produce the second force (column 5, line 25, Fig. 2), the stage assembly including (a) two of the first parts of the first motor (7a, 7b) ; (b) two of the first parts of the second motor (13 left and 13 right); the base and the second stage are isolated from each other (see the air gap and they consist of non-magnetic materials column 3 , line 50) , the base and the second stage is inherently connected to ground via a 4, 1b to the base 1 (Fig. 1a), and at least one of the base and the stage base is a counter mass (2 , Fig. 1a, 2,).

Regarding claim 8 **Bader'965** discloses a stage assembly having two stages (2, 3, Fig. 2)

Regarding claim 9, 10, 11, 13, **Bader'965** discloses a stage assembly having two motors, wherein one of the first part and the second part of the first motor comprises a magnet member (7a, 7b) and the other part comprises a coil member (9); and one of the first part and the second part of the second motor comprises a magnet member (11) and the other part comprises a coil member (13) and at least one magnet member of the first motor and the second motor is planar and/or at least one coil member of the first motor and the second motor is planar (see Fig. 2) , the second stage is movable along the same direction of the first force (the coil 9 and the magnet 7 moves the stage two in the same direction see Fig. 1a), and the direction of the first force is different from the direction of the second force (see Fig. 1b, and 1c stage 2 has different moving direction

than stage 3 perpendicular, see column 5, line 50) and at least one of the first motor and the second motor produces torque about the x and y axes (see column 5, line 50-55).

Regarding claim 29, 31 **Bader'965** discloses a stage assembly having two stages with a gap between the first stage and second stage (see Fig. 2) and the stage includes underside slots for housing the second part of the first motor (coil is located under the second stage) and the second part of the second motor (the magnet is positioned under the stage two see Fig. 1a, 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 12, 14, 15, 16, 20, 21, 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bader US patent 5,763,965** and in view of **Chitayat US patent 6,215,206**.

Bader'965 fails to teach a pair of the motors and produces torque about the Z axis that is perpendicular to a guide surface of the base.

Chitayat'206 teaches a linear actuator having motor to produce torque about the Z axis that is perpendicular to a guide surface of the base (see abstract line 15)

For the purpose of elevating the stage from base.

Art Unit: 2834

Therefor it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine **Bader'965** linear motor with a motor to produce torque about Z axis as taught by **Chitayat'206** for the purpose of elevating the stage from base perpendicularly.

5. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over **Bader'965** as applied to claims **1-6,8-11,13,18,19,29,31** above, and further in view of **Tsuboi US patent 6,552,449**.

Bader'965 teaches applicant invention except an actuator connected to the base, the actuator moving the base.

Tsuboi'449 discloses a moving magnet linear motor having an actuator connected to the base, for purpose of moving the base (see column 1,line 17-21).

Therefor it would have been obvious to one having skill in the art at the time the invention was made to combine **Bader'965** stage assembly an actuator to the base as taught by **Tsuboi'449** for purpose of moving the base.

Regarding **claims 17 and 23**, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the movable stage with six degree freedom between the first and second motor, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

Art Unit: 2834

6. **Claim 27,28,30** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 27, the prior art of the record in particular **Bader'965** nor **Chitayat'206** do not teach or suggest a supporting structure for a two stage assembly including inter alia a second stage having at least one arm that extends in the y direction and includes the first part of the second motor for applying force in y direction to the stage .

Regarding claim 28, the prior art of the record in particular **Bader'965** nor **Chitayat'206** do not teach or suggest a supporting structure for a two stage assembly including inter alia a first part running along the length of the at least one arm, and the at least one arm is supported on the base by bearings.

Regarding claim 30, the prior art of the record in particular **Bader'965** nor **Chitayat'206** do not teach or suggest a supporting structure for a two stage assembly including inter alia the second stage carries a portion of a levitation device which extends along the at least one arms in the y direction, the stage carries another portion of the levitation device, and the levitation device provides a levitation force to support the stage weight.

Communication

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Iraj A Mohandesi whose telephone number is 571-272-2028. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-4099. The fax phone

Art Unit: 2834

numbers for the organization where this application or proceeding is assigned are 571-273-2028 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-0377.

A handwritten signature in black ink, appearing to read "B. Mullins", with a stylized flourish at the end.

BURTON S. MULLINS
PRIMARY EXAMINER

IM
March 21, 2004